

Transitioning to Low-Carbon Fuels & Alternative Fuel Vehicles:

**ADVANCED
TECHNOLOGY**
Transmission & Distribution Business Unit



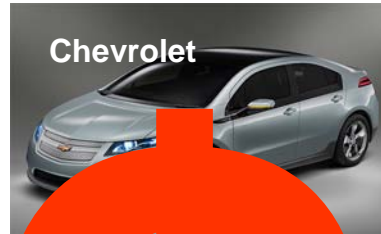
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Fuel Disclosure!

**Southern California Edison is an electric only utility
and while we support all forms of sustainable
alternative transportation fuels...**

**We do tend to support transportation electrification
the most!**

The Good News...(10-12 PEVs by 2012)



Low Carbon Fuel Standard-

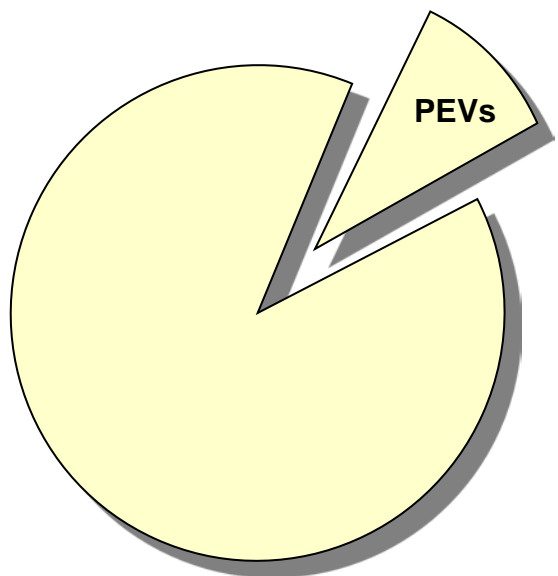
More than just “Low Carbon”

- Stimulate the production and use of sustainable alternative fuels
- Create a mass market for clean transportation solutions
- Reduce and then eliminate California’s dependence on foreign oil

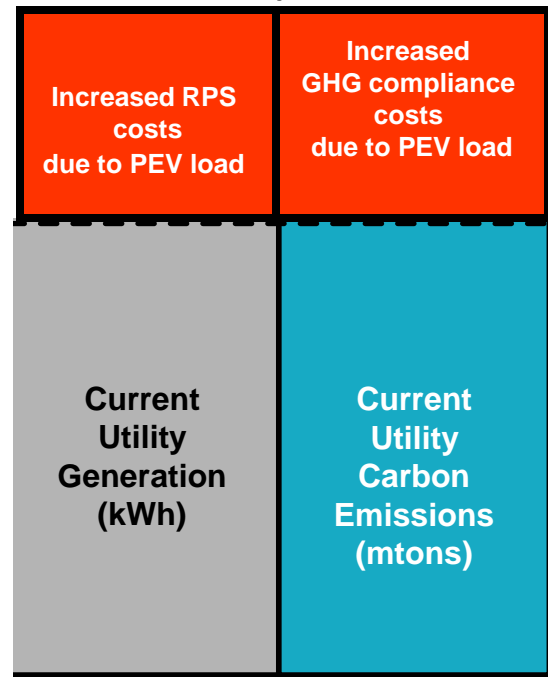
But The Devil is In The Details...

How Do We Address Cross Sector Cost Shift From Liquid To Electricity Fuels?

SCE- est. \$300m per year by 2020



Electricity Fuel



Transportation Sector

Utility Sector

How Will The LCFS Credit Market Develop?

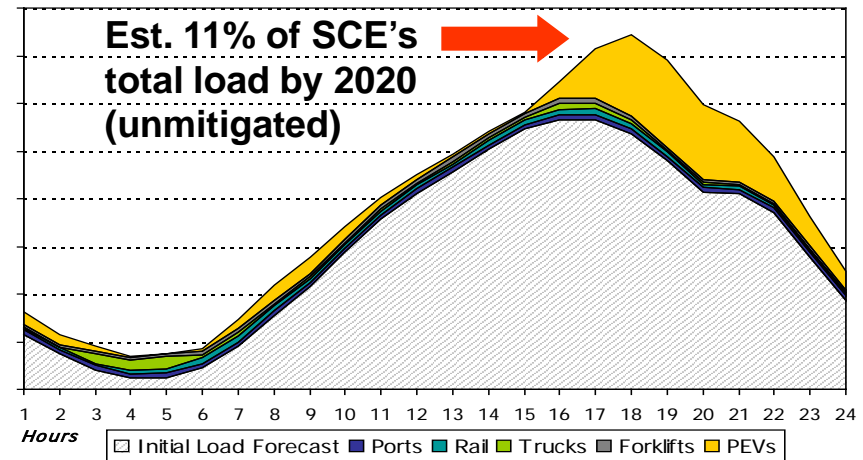
- **Will the Oil Industry purchase credits from utilities?**
- **If so will they do it from day one or when their “requirements” eventually demand it?**
- **Will utilities own the credits on behalf of their customers?**

Harmonize State Load Reduction Policies With “Good Load Growth” From PEVs

Load Reduction

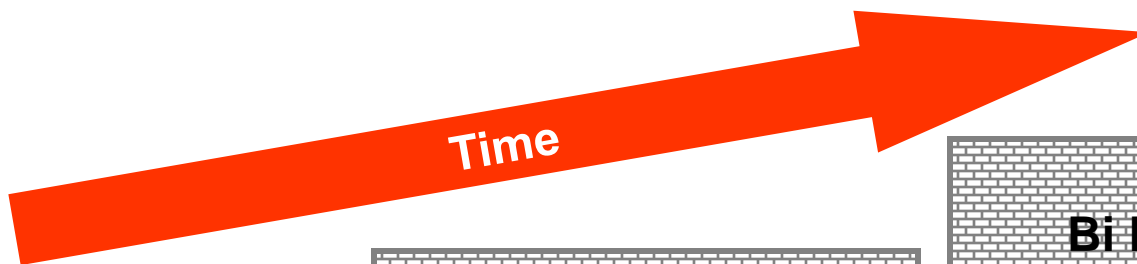
- Tiered Rates
- Smart Meters
- Energy Efficiency
- Demand Response
- Zero Net Energy Homes
- Customer Education

PEV Load Growth



14B kWhs by 2020

Cost Drivers To Support Low Carbon Electrification Are Significant



Residential
Workplace
Public

Distribution System Readiness

Rate Design & Cust. Education
Back Office IT & Systems Dev.
Vehicle Coms. Standards

Effective Load Management

Bi Directional Energy Flow & Control
Auto-grade Battery Storage Dist. & Transmission

Renewables Integration Synergy

LCFS On It's Own Is Not Enough To Drive Electrification

- **Accelerate Technology Improvements**
 - Full Federal appropriations for existing authorized programs
 - Fund RD & D: (CEC PIER & AB 118, CPUC, Air Districts, other)
- **Domestic Supplier Capacity (battery, vehicle and component makers)**
 - Expand funding through Advanced Technology Vehicle Manufacturing Incentive Program
 - ARRA funding
- **Explore New Bus. Models to Overcome Barriers & Reduce Vehicle Costs**
 - Stationary battery applications, 3rd. party battery ownership, battery warranties (or similar), battery standardization, secondary battery use, battery recycling, 3rd. party charging station installation/ownership, etc
- **Promote Deployment of Vehicles and Infrastructure**
 - Fund the EISA section 131 and Clean Cities programs for low-carbon fuel vehicles and infrastructure. Same for state programs (e.g. AB 118)
 - Federal and State government fleet purchases
 - Sustained Consumer Tax Credits for Low-Carbon Fuel Vehicles
 - State and local city monetary and non-monetary incentives
- **Grow Broad Markets**
 - Focus on non-road, heavy duty, goods movement and people movement markets



For more information, contact Ed Kjaer at
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The Search for Sustainable Alternatives...

- 25 years ago
- 15 years ago
- 10 years ago
- 5 years ago
- 3 years ago
- Today
- Tomorrow?

Methanol

EVs

Hybrids

Fuel Cells

Ethanol

PEVs

Stay The Course...Please!